SERDP
Strategic Environmental Research and Development Program
Improving Mission Readiness Through Environmental Research

US Army Corps of Engineers

ECMI Status and Progress

David Price, Rose Kress
US Army Engineer Research & Development Center

SEMP Technical Advisory Committee
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ECMI Status and Progress

PHASE I 1999 - 2001 **DESIGN**	PHASE II 2002 - 2005 **ADAPT**	PHASE III 2006 - 2020 **MAINTAIN**
Extended design, implementation and documentation	Adaptation based on: a) initial monitoring results b) SEMP research results c) land management experience	Long-term maintenance and technology upgrades

- Characterize the long-term spatial and temporal dynamics of key ecosystem properties and processes

  - –conduct baseline ecosystem monitoring in support of SEMP research
  - –contribute to host site integrated monitoring plan at the ecosystem level
  - –develop long-term ecological data set

ECMI Components

- Meteorology
- Surface and ground water
- Soil erosion/deposition
- Land cover type and patterns
- Woody productivity
- Aquatic monitoring

Data Analysis

TAC Recommendations Oct 2002

- Conduct and evaluation of balance between biotic and abiotic components within context of Installation monitoring efforts
- Provide a justification of the erosion/deposition component (costs, benefits, and trade-offs versus other monitoring needs)
- ECMI team needs to coordinate with Dr. Dales Integration effort through goals/objectives of INRMP

ECMI Monitoring

Component	Regional	Installation	Watershed	Site/Population
Land cover type	biotic	biotic		
Land cover pattern	biotic	biotic		
NPP	biotic	biotic		
Woody productivity		biotic	biotic	
Aquatic macro invert		biotic	biotic	biotic
Aquatic physical		abiotic	abiotic	abiotic
Meteorology		abiotic	abiotic	abiotic
Surface water level			abiotic	abiotic
Surface water qual.			abiotic	abiotic
Groundwater level			abiotic	abiotic

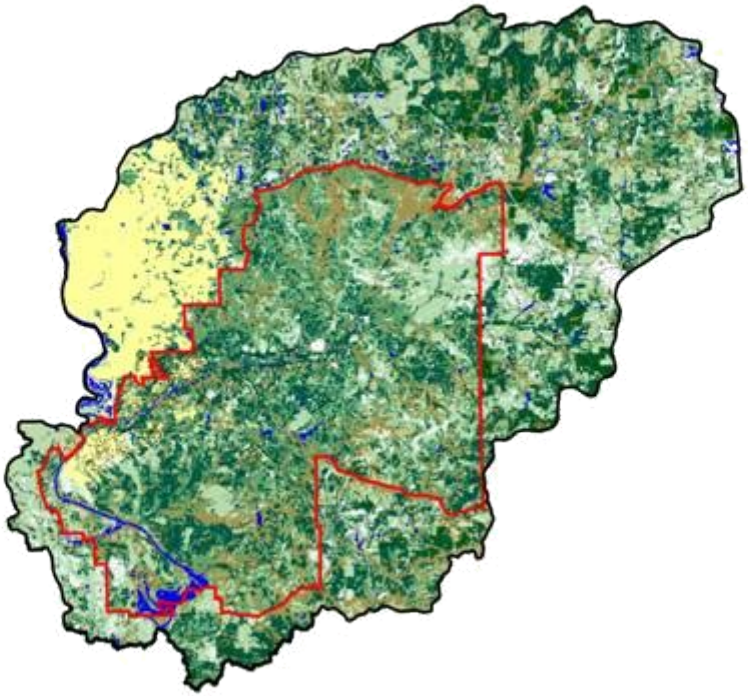
Installation Monitoring

Component	Regional	Installation	Watershed	Site/Population
Listed plants (2)		biotic		biotic
Listed animals (4)		biotic		biotic
Game animals (3)		biotic		biotic
Undesirable plants (1)		biotic		biotic
Undesirable animals (2)		biotic		biotic
Timber monitoring		biotic		biotic
LCTA monitoring (91-95)		biotic		biotic
LRAM monitoring		abiotic		abiotic
Fire monitoring		abiotic		abiotic

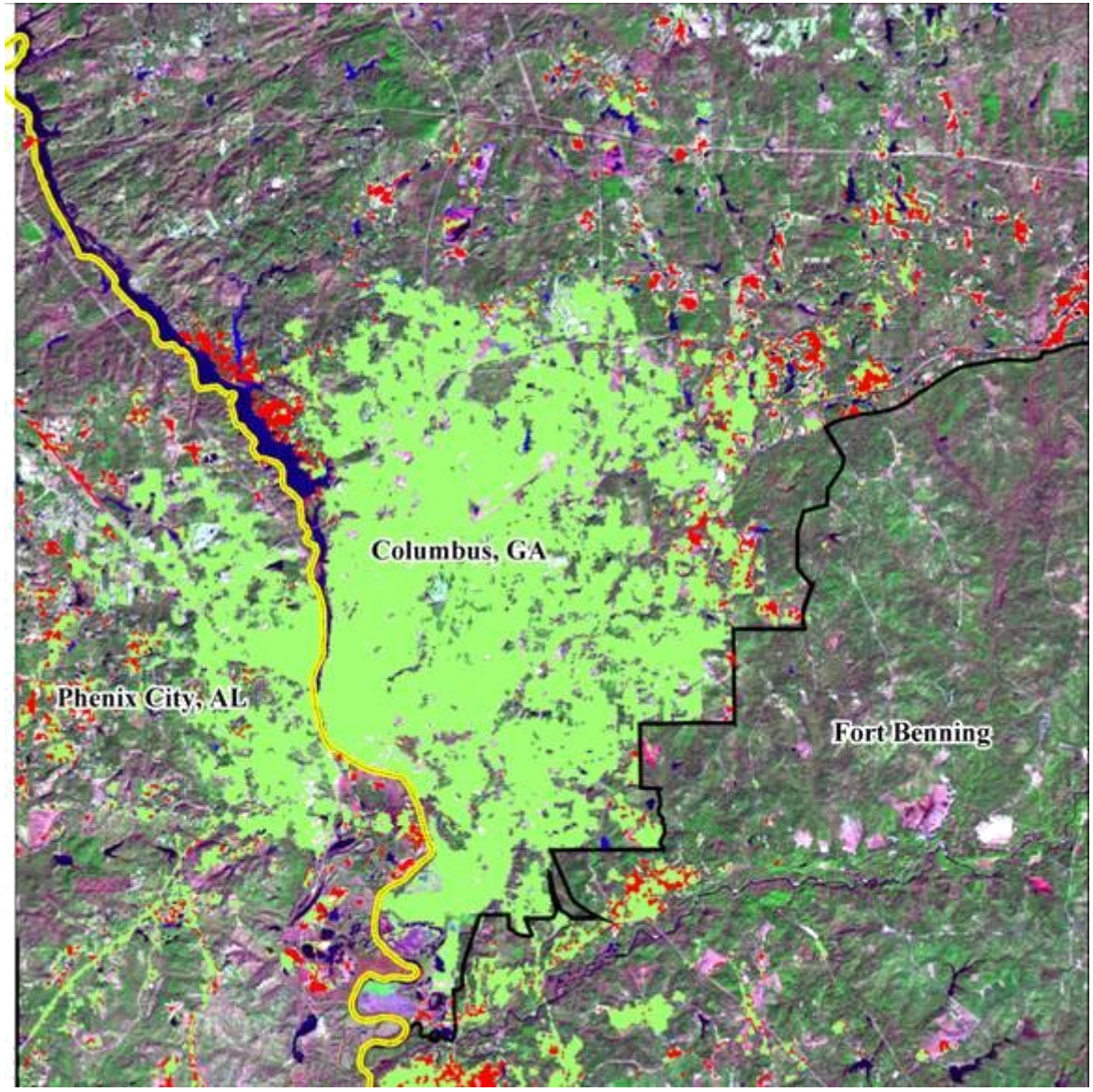
Land Cover Data Analysis
Fragstats Results

Inside Installation			
	1999	2001	Change
Area (Ha)	50,897	51,516	619
Number of Patches	510	775	265
Core Area (Ha)	29,279	25,916	-3,363
Edge Density (Meters Per Hectare)	45	56	11

Outside Installation			
	1999	2001	Change
Area (Ha)	53,420	53,027	-393
Number of Patches	1503	2585	1082
Core Area (Ha)	27,531	20,565	-6,965
Edge Density (Meters Per Hectare)	41	58	17



Urban Encroachment

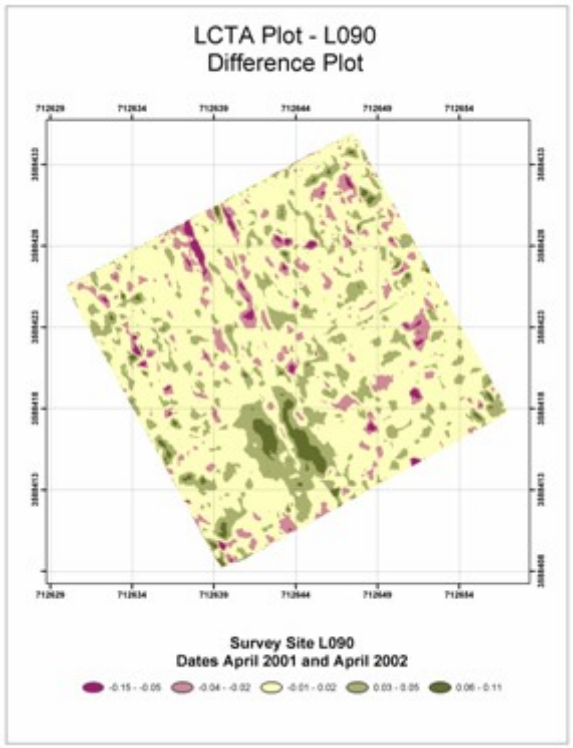


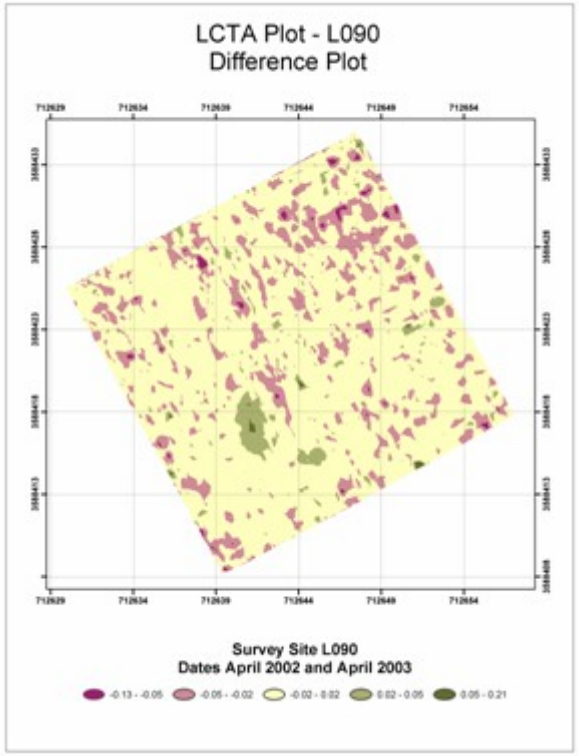
Urban Delineation and Comparison from 1999 and 2001 Landsa Imagery

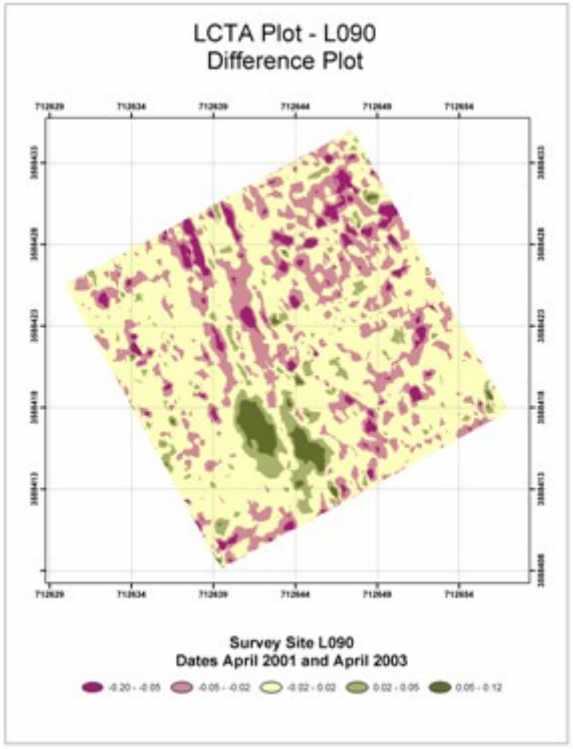
Urban

Urban Expansion (3,722 Hectares)

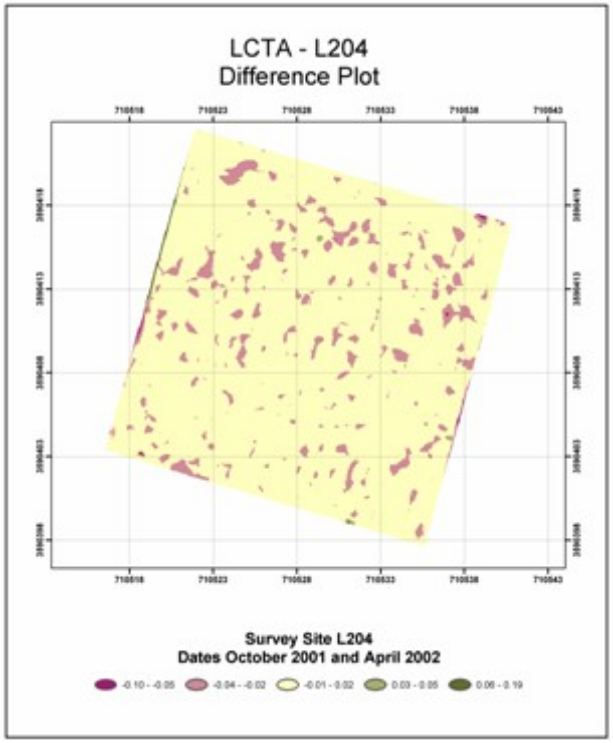
Soil Erosion and Deposition Analysis

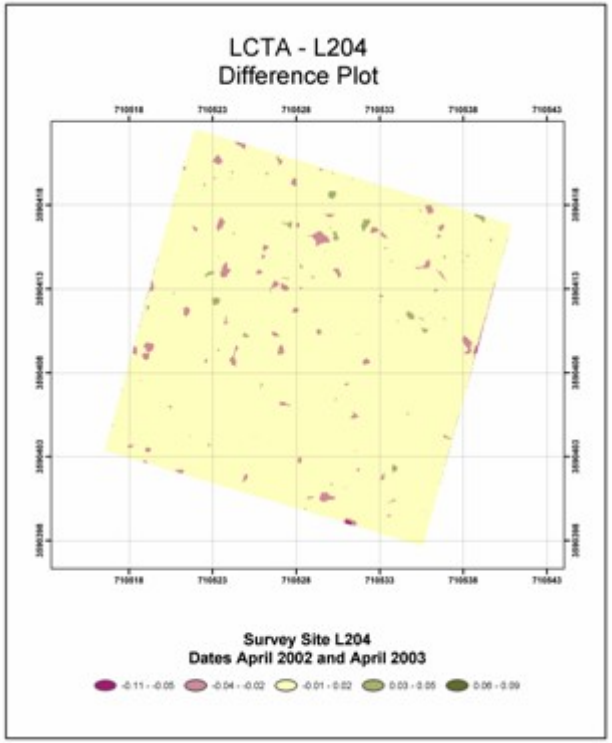


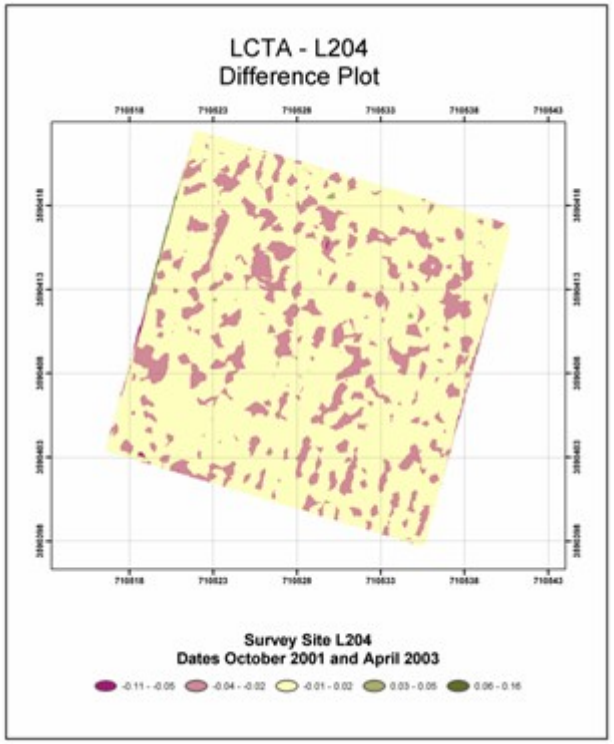




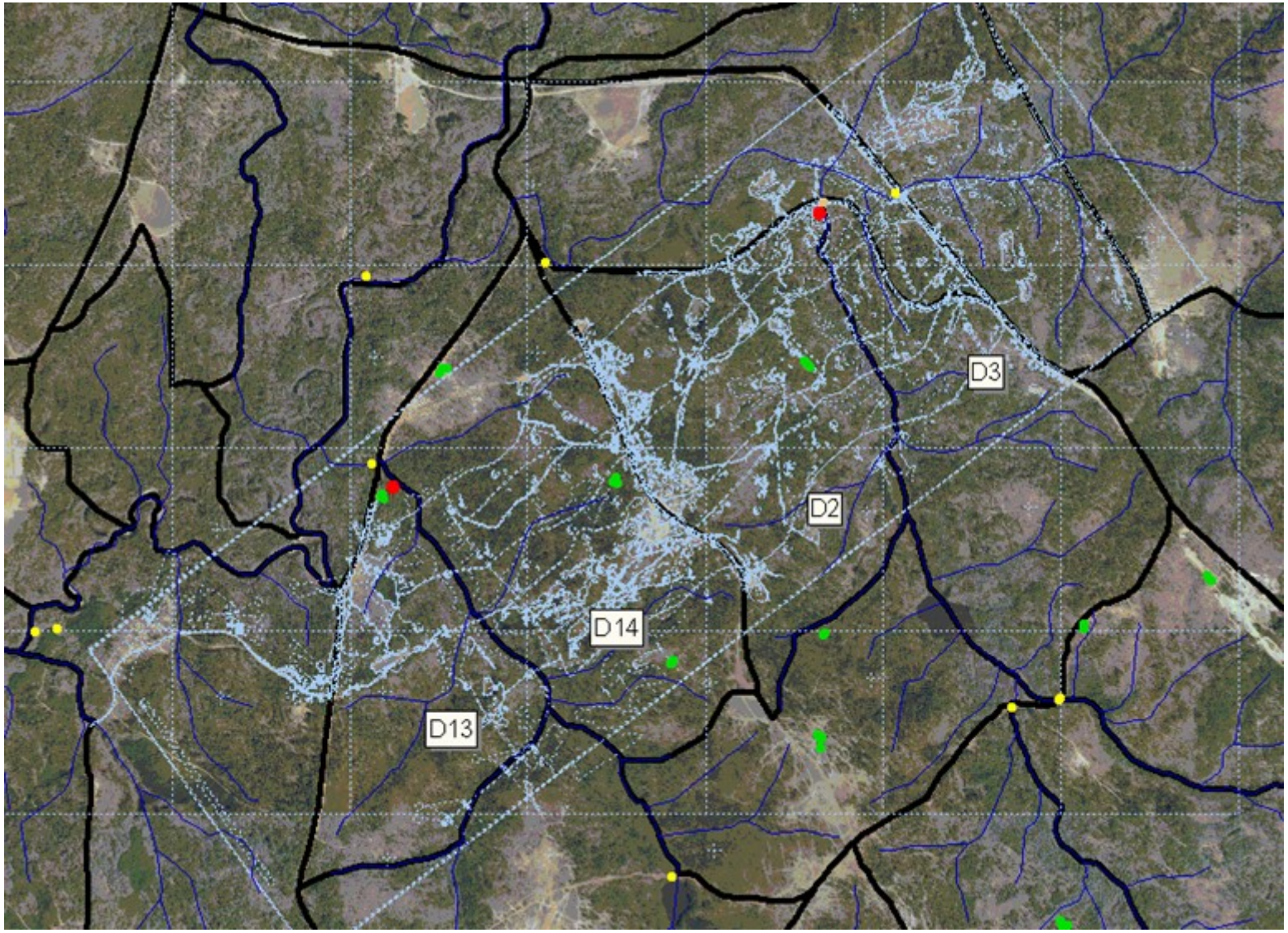
Soil Erosion and Deposition Analysis





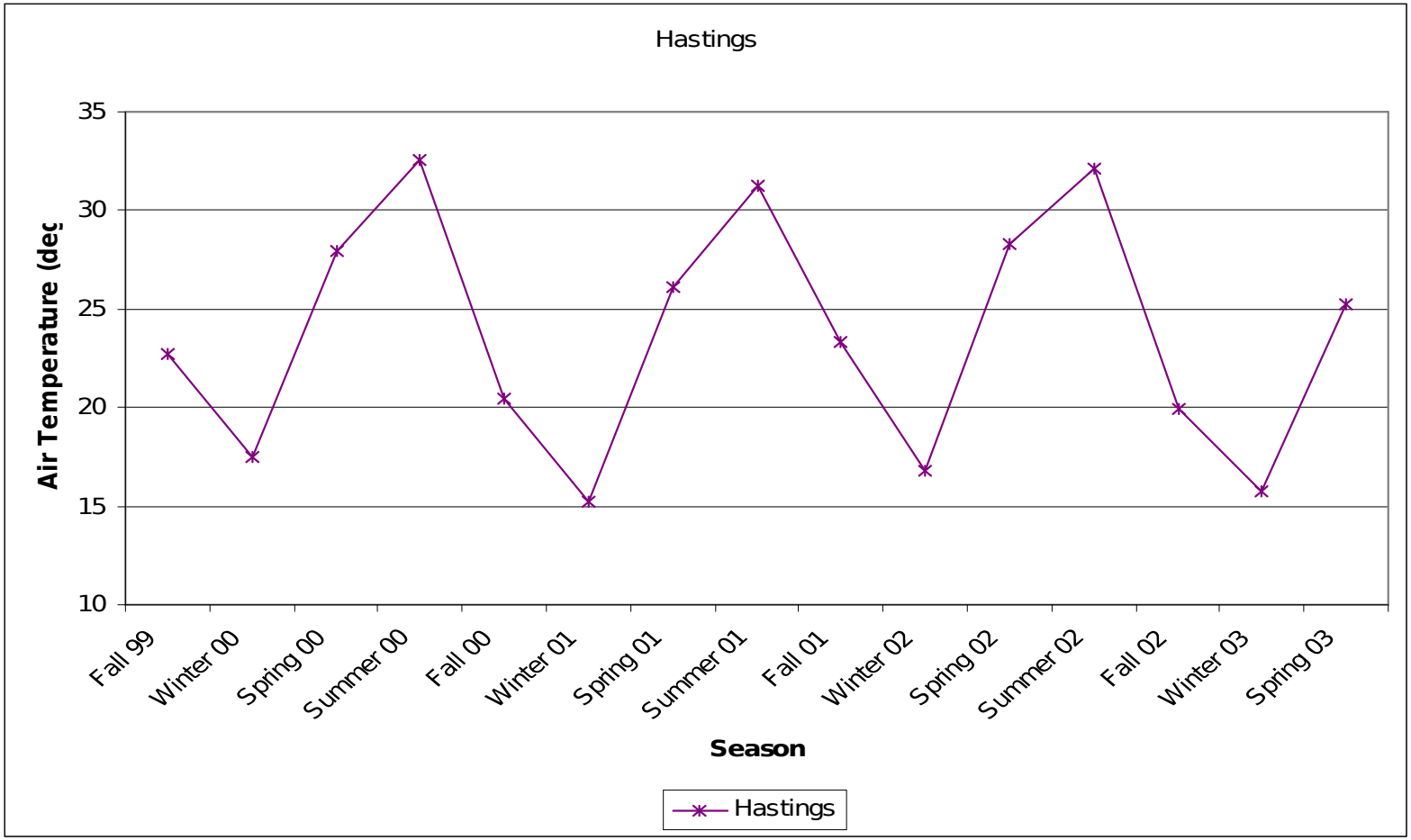


DMPRC Footprint



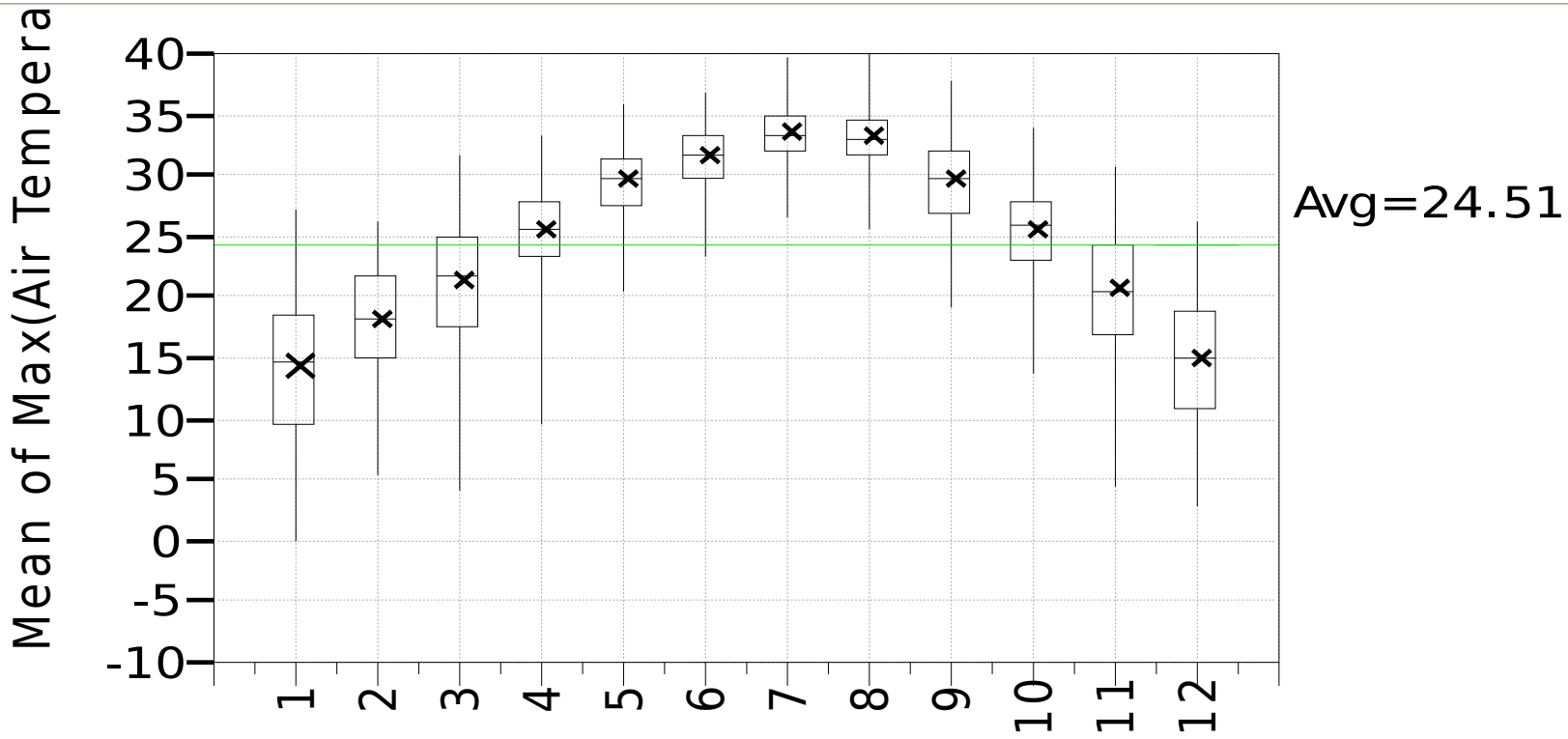
Green = Erosion
Yellow = RBP
Red = Surface Water
Orange = Ground Water

Seasonal Air Temperature Trend

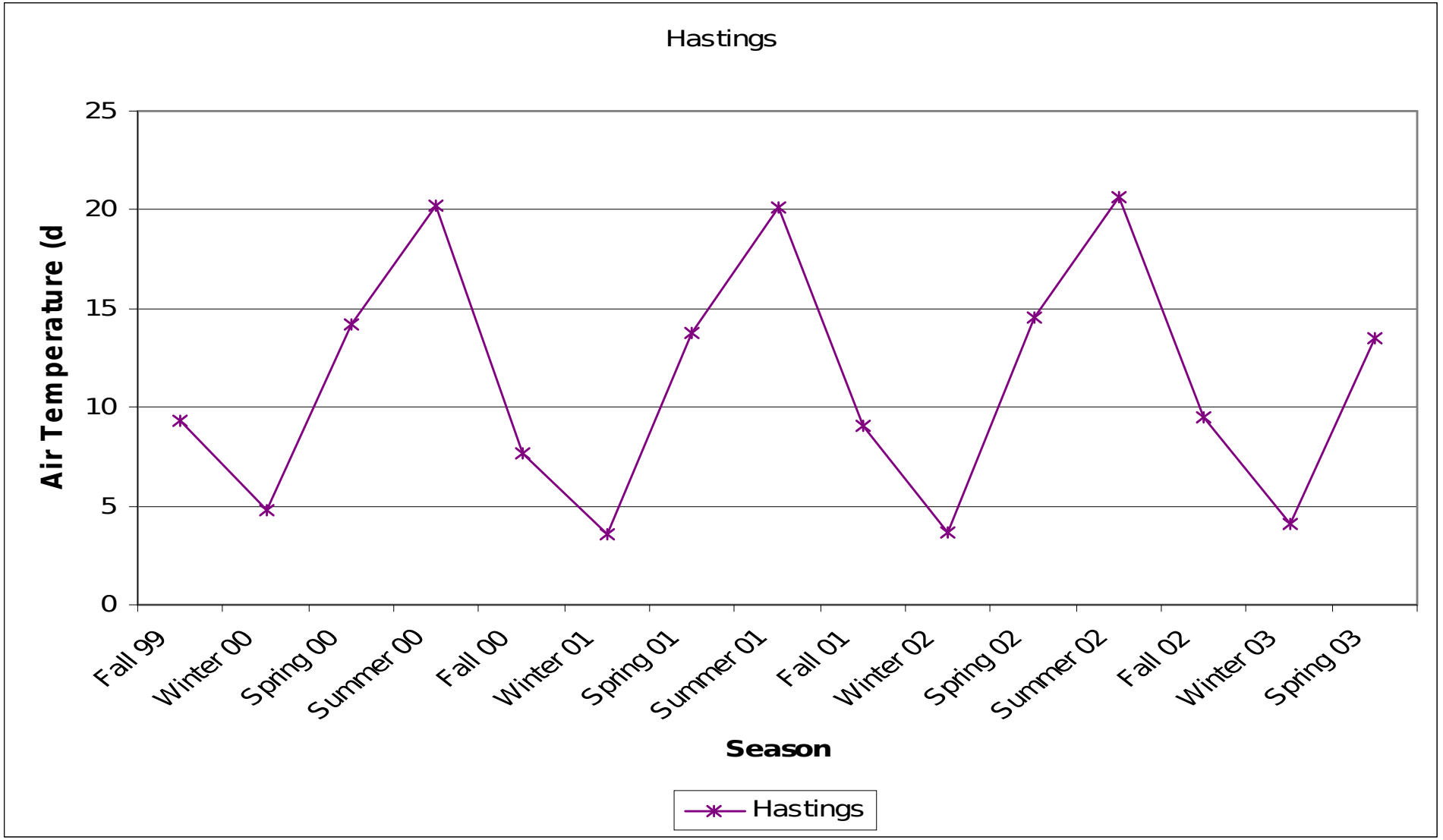


- Average Max Air Temp

Monthly Air Temperature

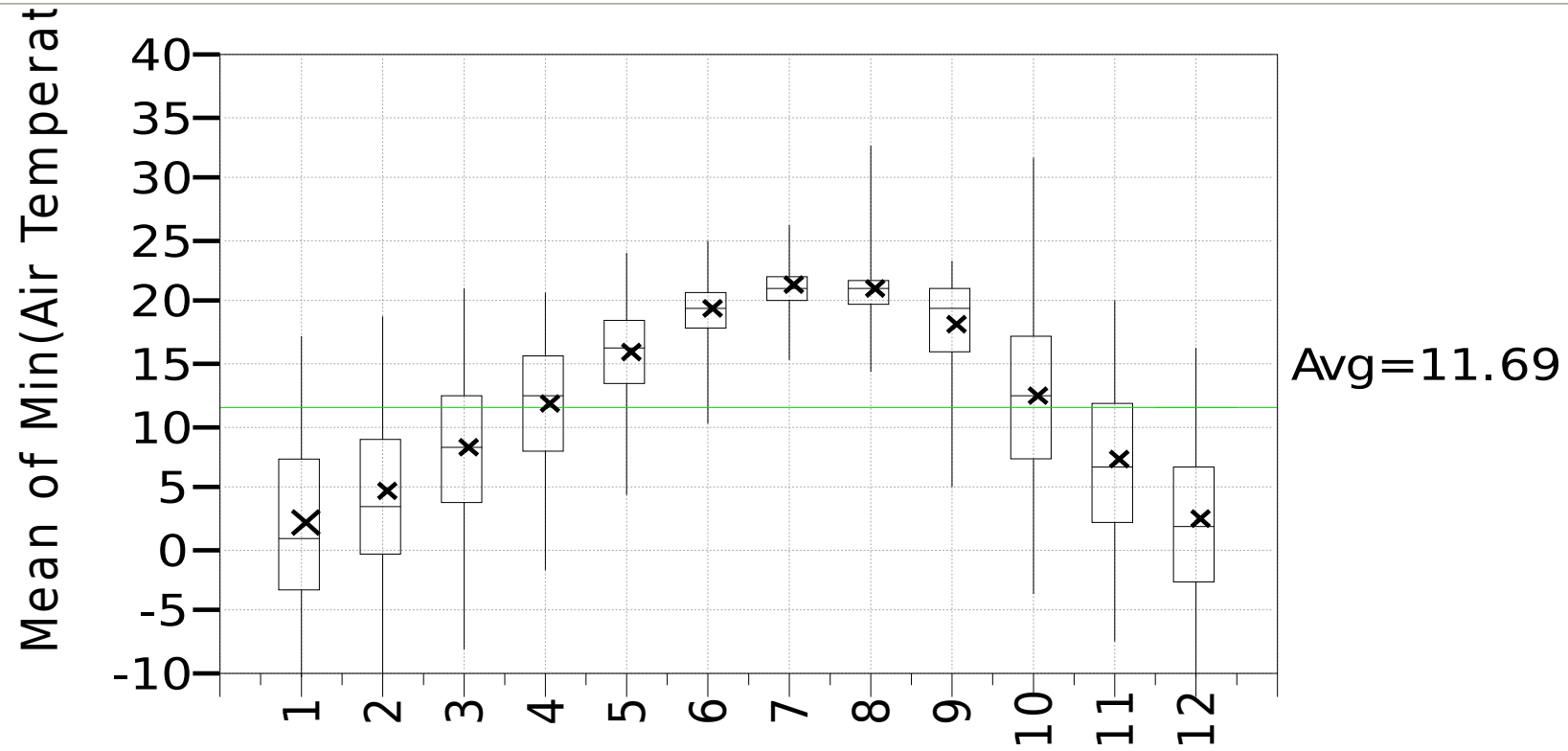


Seasonal Temperature Trend

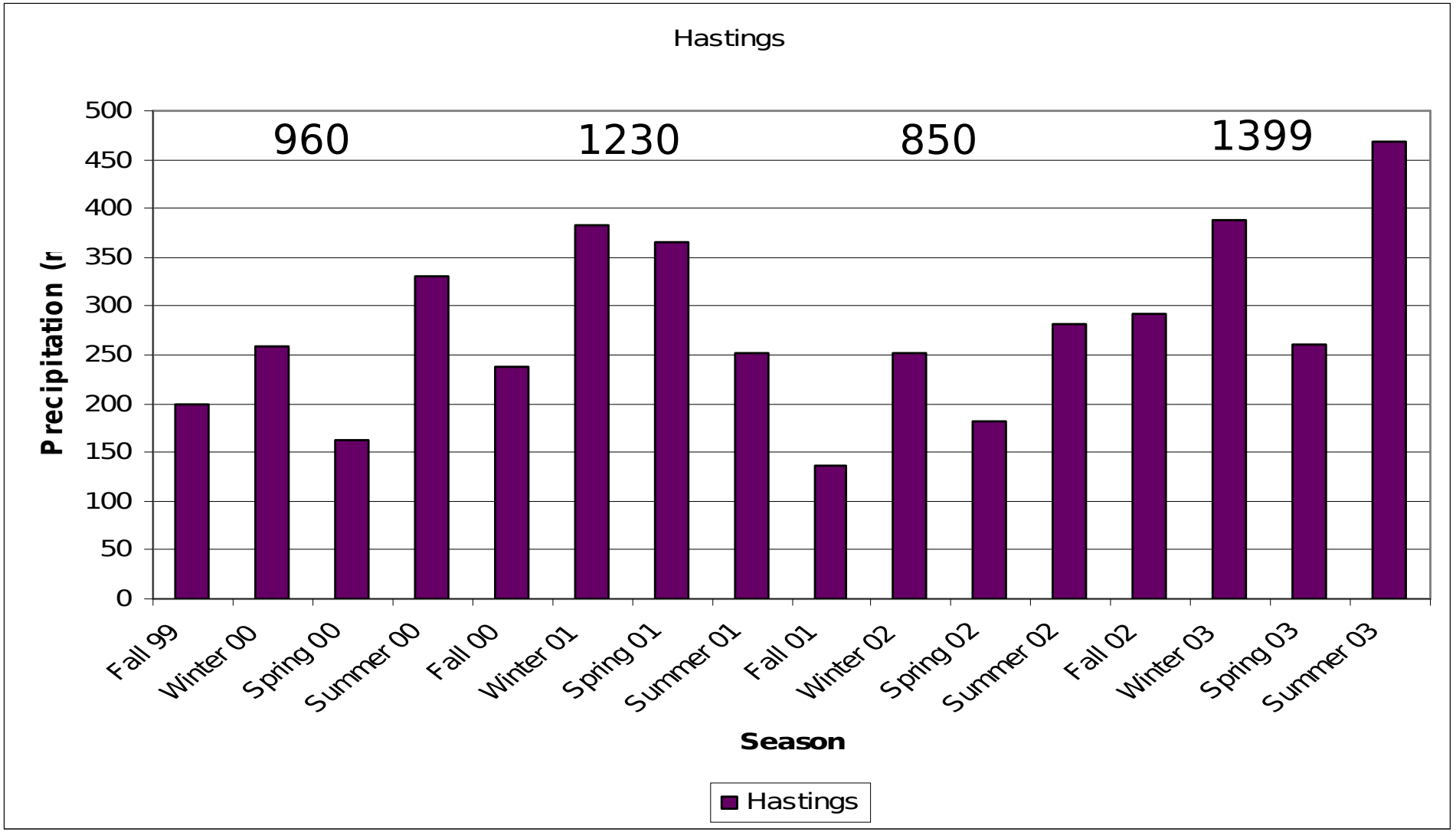


- Average Min Air Temp

Monthly Air Temperature

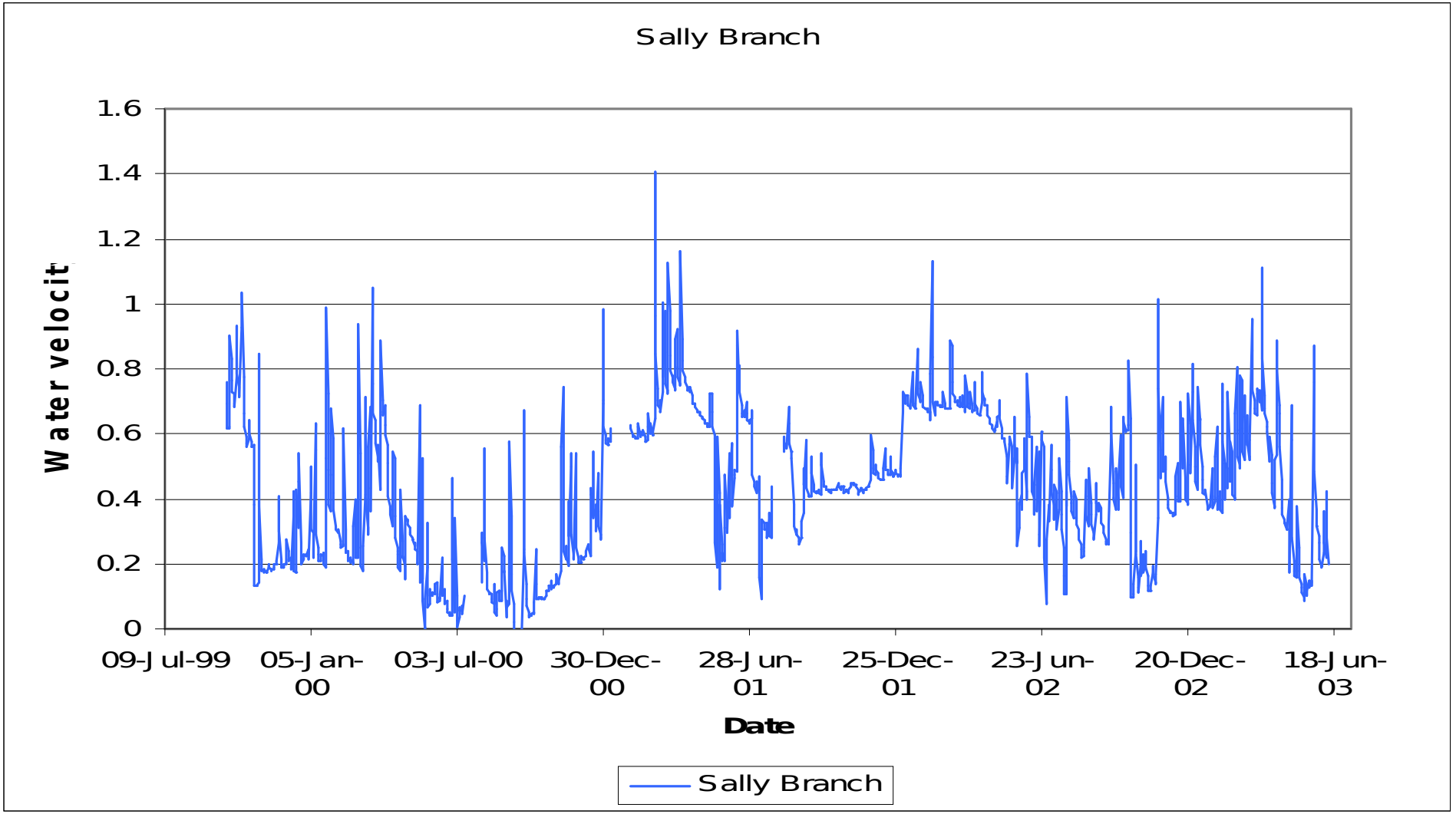


Seasonal Precipitation Trend



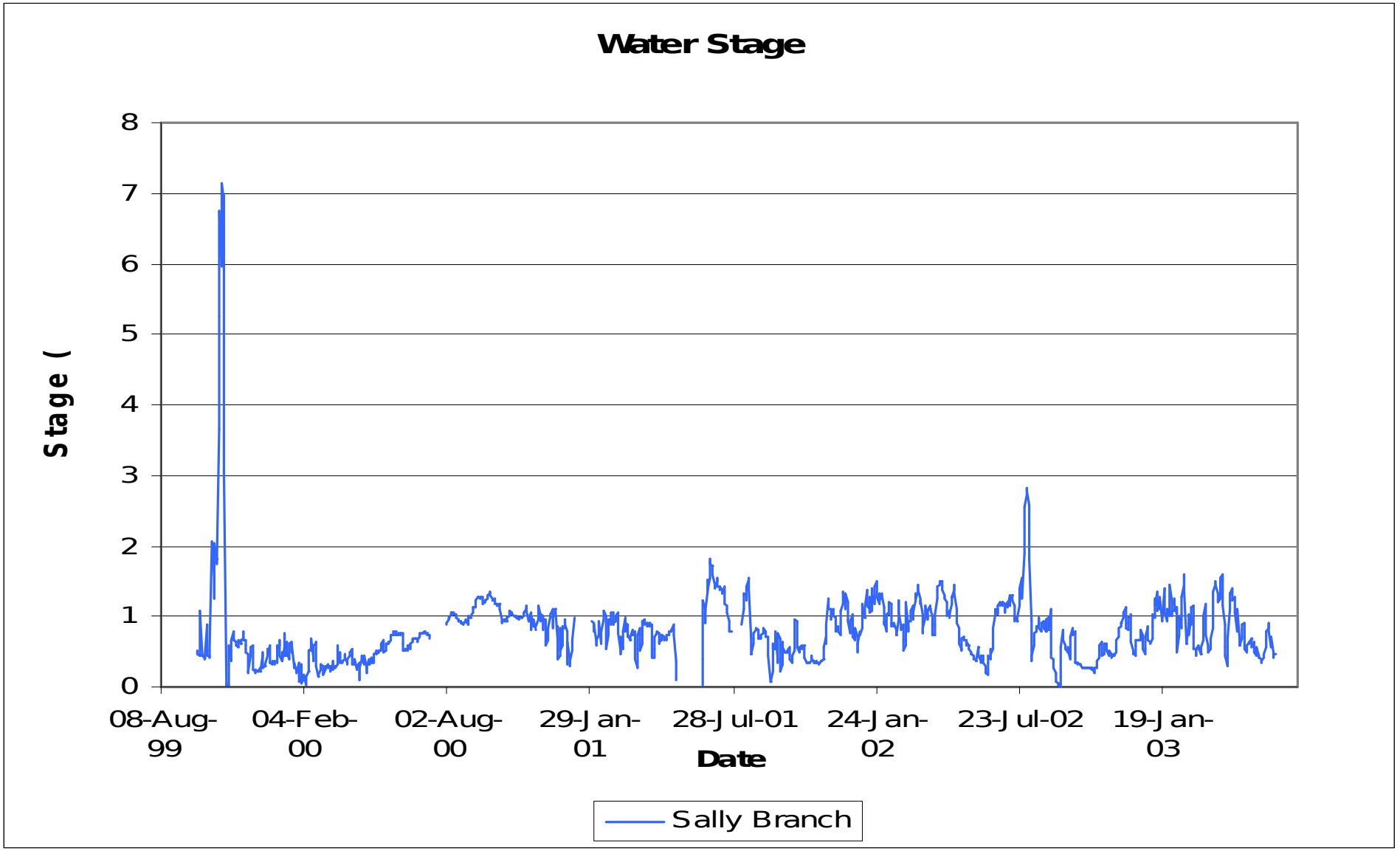
- Average 1810 – 1997 = 1272 MM

Water Velocity Trend



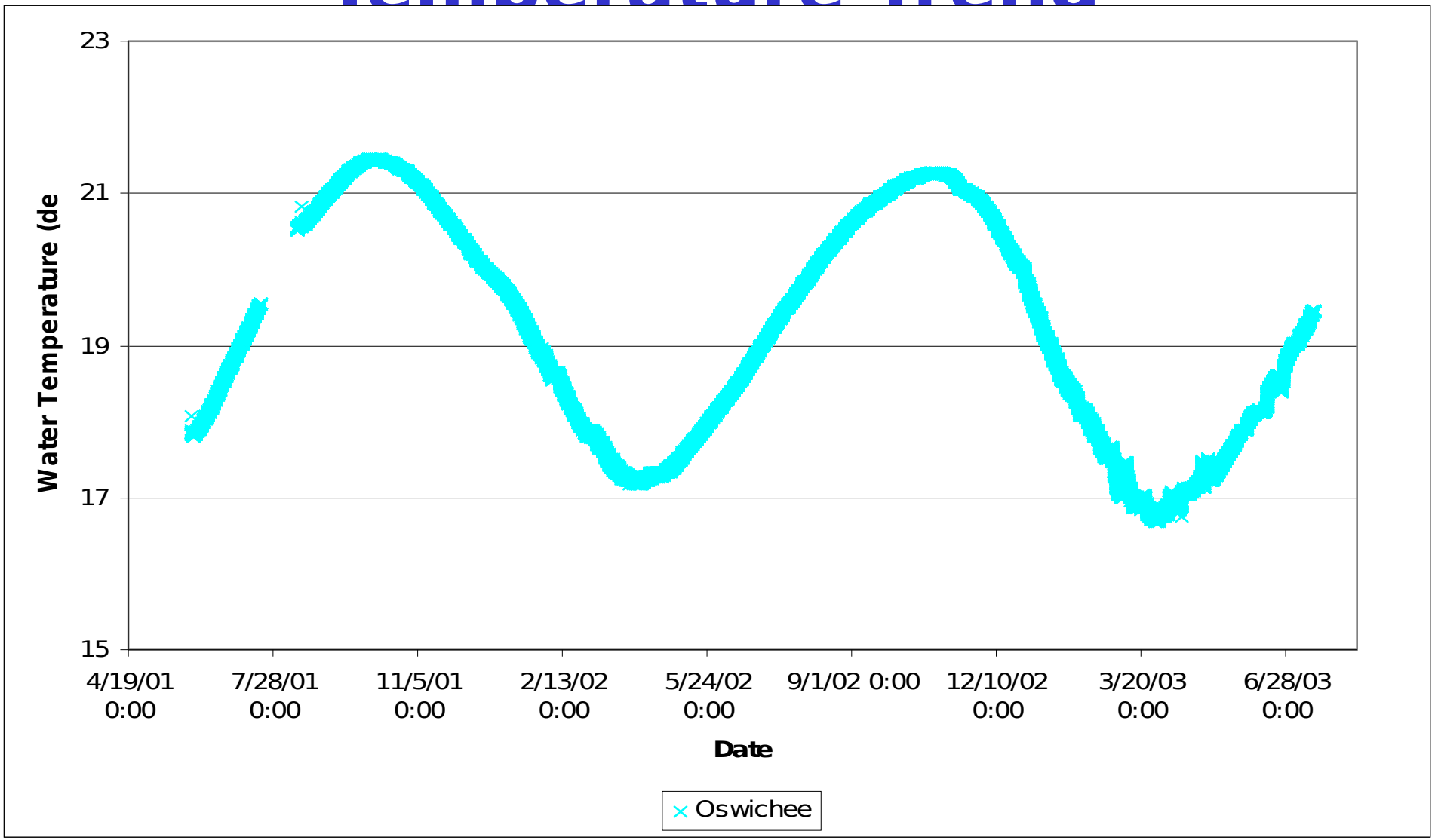
- Water Velocity at Sally Branch

Water Stage Trend



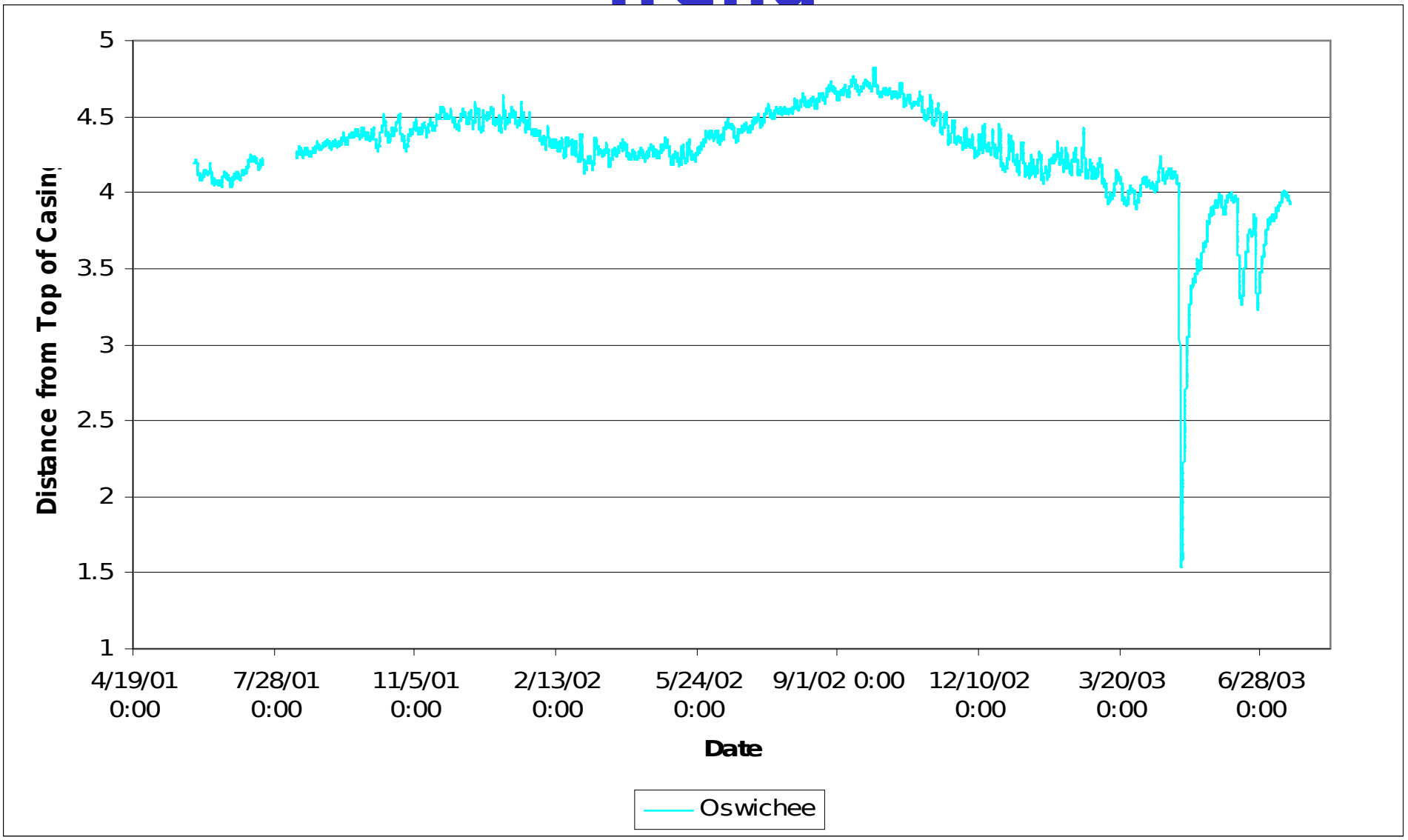
- Water Stage at Sally Branch

Ground Water Temperature Trend



- Ground Water Temperature

Ground Water Depth Trend



- Ground Water Depth

Summary of responses to TAC comments

- Balance between biotic and abiotic components is appropriate in the context of Installation monitoring and supports future needs
- Erosion/Deposition component recommendations:
  - Do not re-measure in FY 04 and continue analysis
  - Re-evaluate Installation needs for erosion monitoring
  - Re-design erosion monitoring (with NRSC) to meet Installation needs
- ECMI is actively engaged in the integration effort with Dr. Dale et al.
- Additional analysis of ECMI data during FY 04 will support the ECMI handoff and technology transfer effort lead by Dr. Fehmi